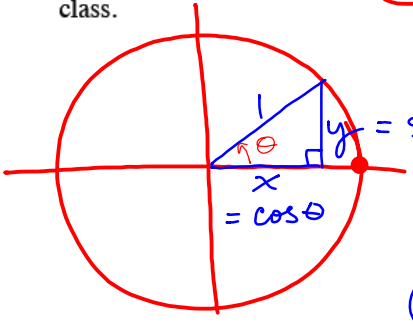
Alg. 2 Warm Up # 8-2 Solve:

1. $3|2x - 5| - 8 = -5$ 2. $\sqrt{3x^2 + 11x} = 2$

Yesterday's CP's:

7-48. If you know the sine of an angle in a unit circle, can you find its cosine? How? Work with your team to find a strategy and be prepared to share it with the class.

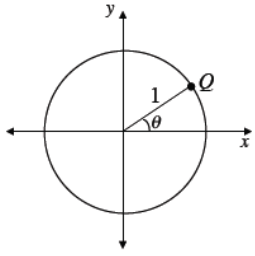


$y^2 + x^2 = 1^2$

$(\sin\theta)^2 + (\cos\theta)^2 = 1^2$

$\sin^2\theta + \cos^2\theta = 1$

7-49. An angle θ on the unit circle has a cosine of $\frac{3}{4}$.



a. Find the exact coordinates of point Q by using the Pythagorean Theorem.

b. What is the value of $\sin\theta$?

c. Using what you determined in problems 7-47 and 7-48, how could you rewrite the Pythagorean Theorem using trigonometric functions for the lengths of the sides? When written like this, the Pythagorean Theorem is called the **Pythagorean Identity**.

HW Questions:

Preview

7-53. Use the Pythagorean Identity to find the exact coordinates of a point on the unit circle that has $\sin\theta = \frac{1}{4}$.

$\sin^2\theta + \cos^2\theta = 1$

$\left(\frac{1}{4}\right)^2 + \cos^2\theta = 1$

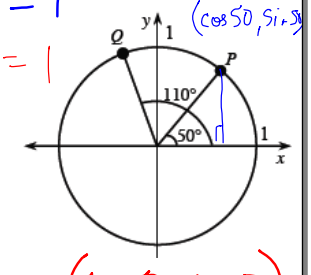
$\frac{1}{16} + \cos^2\theta = \frac{16}{16}$

$-\frac{1}{16} \quad -\frac{1}{16}$

$\sqrt{\cos^2\theta} = \sqrt{\frac{15}{16}}$

$\cos\theta = \frac{\sqrt{15}}{4}$

7-54. Find the coordinates of points P and Q on the unit circle at right.

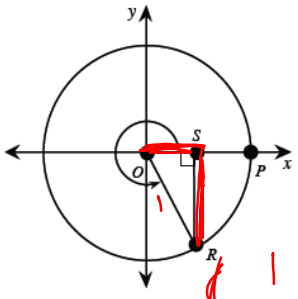


$(\cos\theta, \sin\theta)$

$(\cos 110^\circ, \sin 110^\circ)$

$Q \approx (-0.34, 0.94)$

7-55. The measure of $\angle ROS$ in ΔROS below is 60°.

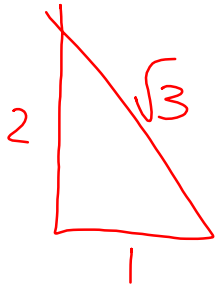


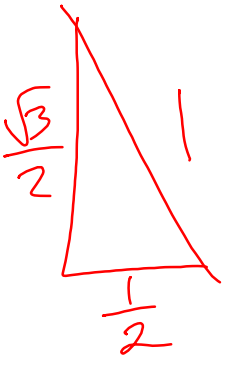
a. The curved arrow represents the rotation of $\overline{OR}$, beginning from the positive x-axis. Through how many degrees has $\overline{OR}$ rotated?

b. If $OR = 1$, what are the *exact* lengths of OS and SR?

c. What are the *exact* coordinates of point R?

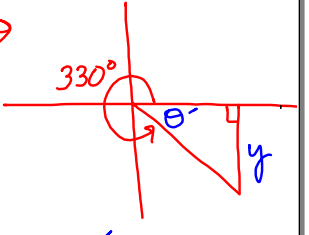
$\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$



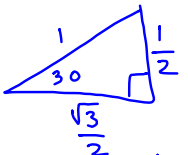


7-56. What angle in the first quadrant could you reference to help you find the sine and cosine of each of the following angles?

a. 330° b. 120° c. 113° d. 203°



$\theta' = 30°$ from special Δ



$\sin 30° = \frac{1}{2}$

so $\sin 330° = -\frac{1}{2}$

7-57. Solve $\left(\frac{1}{8}\right)^{(2x-3)} = \left(\frac{1}{2}\right)^{(x+2)}$ for x.

7-58. Sketch a graph of each equation below.

a. $y = -2(x-2)^2 + 3$

b. $y = (x-1)^3 + 3$

$y = 3^x + 5$

7-59. Solve $3^x + 5 = x^2 + 5$ using any method.

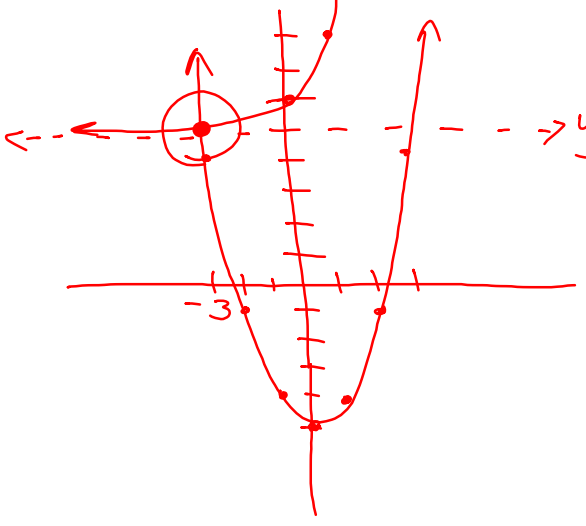
check

$x = -3.1$

$= -3.2$

$y = 5$

$= -3.3$



7-60. Rip-Off Rentals charges \$25 per day plus 50¢ per mile to rent a mid-sized car. Your teacher will rent you his or her family sedan and charge you only 3¢ if you drive one mile, 6¢ if you drive two miles, 12¢ if you drive three, 24¢ for four, and so on.

let x = # of miles
y = cost for a 2 day trip.

a. Write an equation that will give you the cost to rent each car.

b. If you plan to rent the car for a two-day road trip, which is the better deal if you drive 10 miles? 20 miles? 100 miles?

7-61. Refer back to your solutions from problems 7-23, 7-32, and 7-44. Explain how these problems are related.

a) $y = 50 + 0.5x$

Solving a 3 variable equation with a grapher:

$$x + 7y - 6z = -12$$
$$-2x - 3y + z = -9$$
$$2x + 5y + 5z = 19$$

rref $\begin{bmatrix} 1 & 0 & 0 & \# \\ 0 & 1 & 0 & \# \\ 0 & 0 & 1 & \# \end{bmatrix}$

Write as an augmented matrix:

$$\begin{bmatrix} 1 & 7 & -6 & -12 \\ -2 & -3 & 1 & -9 \\ 2 & 5 & 5 & 19 \end{bmatrix}$$

order: 3 x 4
(3 rows by 4 columns)

* enter matrix in calculator

2nd MATRIX ➤ EDIT ENTER

* quit that screen
* choose rref from

2nd MATRIX ➤ MATH

* enter the letter where your matrix is stored

Try another:

$$7x - 4y - z = -1$$
$$3x + 2y + 3z = 15$$
$$x - y + z = -5$$

(3, 6, -2)

Classwork: Quiz Practice

(Salmon worksheet)

HW: Exponents

Tan worksheet

These are both optional for Juniors taking the Smarter Balance Test. Extra credit for the tan WS.